



[4910-13]

## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Parts 36 and 91**

**Docket No.: FAA-2015-3782; Notice No. 15-08**

**RIN 2120-AK52**

#### **Stage 5 Airplane Noise Standards**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** This action would establish a new noise standard for certain subsonic jet airplanes and subsonic transport category large airplanes. This noise standard, known as Stage 5, would apply to any person submitting an application for a new airplane type design with a maximum certificated takeoff weight of 121,254 pounds (55,000 kg) or more on or after December 31, 2017; or with maximum certificated takeoff weight of less than 121,254 pounds (55,000 kg) on or after December 31, 2020. This change would reduce the noise produced by new airplanes and harmonize the noise certification standards for those airplanes certificated in the United States with the new International Civil Aviation Organization noise standard in Annex 16, Chapter 14, effective July 14, 2014.

**DATES:** Send comments on or before [INSERT DATE 90 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** Send comments identified by docket number FAA-2015-3782 using any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov> and follow the online instructions for sending your comments electronically.
- Mail: Send comments to Docket Operations, M-30; U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE., Room W12-140, West Building Ground Floor, Washington, DC 20590-0001.
- Hand Delivery or Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- Fax: Fax comments to Docket Operations at 202-493-2251.

Privacy: In accordance with 5 USC 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to [www.regulations.gov](http://www.regulations.gov), as described in the system of records notice (DOT/ALL-14 FDMS), which can be reviewed at [www.dot.gov/privacy](http://www.dot.gov/privacy).

Docket: Background documents or comments received may be read at <http://www.regulations.gov> at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** For technical questions concerning this action, contact Mehmet Marsan, Office of Environment and Energy (AEE-100), Federal

Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267-7703; facsimile (202) 267-5594; e-mail mehmet.marsan@faa.gov.

## **SUPPLEMENTARY INFORMATION:**

### **Authority for this Rulemaking**

The FAA's authority to issue rules on aviation safety is found in Title 49 of the United States Code. Subtitle I, Section 106 describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the agency's authority.

This rulemaking is promulgated under the authority described in Subtitle VII, Part A, Subpart III, Section 44715, Controlling aircraft noise and sonic boom. Under that section, the FAA is charged with prescribing regulations to measure and abate aircraft noise. This regulation is within the scope of that authority since it would establish stricter noise limits for certain newly certificated airplanes. Applicants for type certificates and changes in type design made after the dates proposed in this rulemaking would be required to comply with the new regulation when adopted.

### **I. Executive Summary**

#### **A. Summary of the Proposed Rule**

The FAA is proposing to amend Title 14, Code of Federal Regulations (14 CFR) parts 36 and 91 to add a new noise standard to be known as Stage 5. This noise standard would apply to any person submitting an application for a new airplane that has a maximum certificated takeoff weight of 121,254 pounds (55,000 kg) or more on or after December 31, 2017; or that has a maximum certificated takeoff weight of less than 121,254 pounds (55,000 kg) on or after December 31, 2020. A certification applicant could choose

to use this standard on a voluntary basis after the rule is effective but before the new limits are required.

**B. Summary of Costs and Benefits**

The FAA anticipates that by the time this proposed rule would become effective (after December 31, 2017 for subsonic transport category large airplanes and subsonic jet airplanes, and after December 31, 2020 for smaller versions of the subject airplanes), existing noise reduction technologies will allow subject airplanes to comply with these proposed requirements. Accordingly, the proposed rule would have minimal, if any, cost.

**II. Background**

**A. Statement of the Problem**

In October 2001, the 33rd Session of The International Civil Aviation Organization (ICAO) Assembly adopted Resolution A33-7, which outlined the basic components of a “Balanced Approach” process for managing aircraft noise at international airports. The Balanced Approach to noise mitigation includes (i) the reduction of noise at its source (i.e., the aircraft), (ii) improved land use planning around airports, and (iii) a wider use of aircraft operating procedures and restrictions that abate noise.

As source noise reduction technology evolves, ICAO introduces new standards to encourage its application. In March 2014, ICAO published a new, more stringent noise standard (which it designated Chapter 14) for subsonic jet airplanes and subsonic transport category large airplanes. This new standard became applicable on January 1, 2015 in those countries that use Annex 16 Volume I as the basis for their aircraft noise certification

regulations. As an active member of ICAO, the United States supported the development of this quieter, more stringent aircraft noise standard.

Since the new Chapter 14 is effective and can be used by other ICAO member countries when certifying aircraft in the future, delay in harmonizing U.S. regulations with the standards of Chapter 14 could create a situation in which an airplane certification applicant would have to show compliance with two different standards – the Stage 4 requirement in 14 CFR Part 36 and the Chapter 14 requirements of countries that have adopted Annex 16. This circumstance could significantly increase the financial burden on applicants without any benefit.

The adoption of the Stage 5 noise standard for new airplane type designs should not be interpreted as signaling the start of an action aimed at phasing out the existing noise standards that apply to the production or operation of current airplane models. There are no operational restrictions nor production cut-offs on the use of Stage 3 or Stage 4 airplanes in the United States. The adoption of the Stage 5 noise standard for new airplane type designs does not impact either of these existing noise standards that apply to the production or operation of current airplane models in the United States.

B. A Brief History of U.S. Noise Standards

- **1969** - The FAA promulgated the first aircraft noise regulations in 14 CFR part 36 (“Noise Standards: Aircraft Type Certification”). The new part 36 became effective on December 1, 1969, and set a limit on noise emissions of large aircraft of new type design by establishing Stage 2 certification standards.

- **1972** - The U.S. Congress enacted the Noise Control Act, which gave the FAA authority to set limits for aircraft noise emissions. Under this authority, the FAA amended part 36 in 1973 to give a noise stage designation to all newly produced airplanes.

- **1976** - The FAA amended the aircraft operating rules of 14 CFR part 91 by adding a new Subpart E entitled “Operating Noise Limits.” This regulation established a phased compliance program for U.S. domestic operators that required them to achieve compliance with Stage 2 or Stage 3 certification standards for all four-engine jet airplanes by January 1, 1985.

- **1977** - The FAA amended part 36 to provide for three stages of aircraft noise, each with specified limits. This regulation required applicants for new type certificates applied for on or after November 5, 1975, to comply with “Stage 3” noise limits, which were stricter than the noise limits then being applied. Airplanes in operation at the time that did not meet the Stage 3 noise limits were designated “Stage 2” airplanes.

- **1980** - Congress enacted the Aviation Safety and Noise Abatement Act of 1979 (ASNA). The ASNA required the FAA to promulgate regulations that extended the application of the January 1, 1985, cutoff date for the domestic operation of four-engine Stage 1 jet airplanes to apply to U.S. and foreign operators. In 1980, the 1985 operation deadline was made applicable to both domestic and international operations arriving to or departing from a point in the United States.

- **1990** - Recognizing the need to both expand airport capacity and provide relief from aviation noise, Congress enacted the Airport Noise and Capacity Act of 1990 (ANCA) on November 5, 1990 (now codified at 49 U.S.C. 47521–47533). The statute required that, after December 31, 1999, all jet airplanes over 75,000 pounds operating in

the contiguous United States comply with Stage 3. The regulations implementing the part of the ANCA known as the Stage 3 transition rule became effective on September 25, 1991, and are codified in part 91. The 1991 regulations provided two options to transition domestic fleets to meet this requirement. One option allowed an operator to phase out its Stage 2 airplanes to specified percentages at each compliance date. The second option allowed operators to begin with a fleet that was at least 55 percent Stage 3 and increase that percentage at each compliance date. A new entrant operator (one that did not conduct operations on or before November 5, 1990) was required to have a fleet of at least 25 percent Stage 3 airplanes at the first compliance date and increase the percentage thereafter. All operators were required to operate 100 percent Stage 3 fleets after December 31, 1999. The transition percentages did not apply to non-U.S. operators, though they too remain subject to the operating limitation after December 31, 1999.

- **1991** - Congress enacted a separate Stage 2 restriction for operations in Hawaii.
- **2005** - The FAA amended part 36 to establish a new quieter noise standard to be known as Stage 4. This noise standard applied to any person submitting an application for a new airplane type design on and after January 1, 2006. Previous Stage 2 and Stage 3 stringencies specified reductions at each noise certification measurement point (flyover, lateral, and approach). Stage 4 combined the three traditional measurement points allowing a total cumulative reduction without specifying reductions at any one measurement point.
- **2012**- Congress prohibited the operation of jet airplanes weighing less than 75,000 pounds from operating in the contiguous United States after December 31, 2015, unless the airplane met Stage 3 noise levels.

C. Development of the Stage 5 Noise Standard

Much of the background for the development of a Stage 5 noise standard has taken place in the international arena through ICAO. The environmental activities of ICAO are largely undertaken through the Committee on Aviation Environmental Protection (CAEP), which was established by ICAO in 1983, and which superseded the Committee on Aircraft Noise and the Committee on Aircraft Engine Emissions. The CAEP assists ICAO in formulating new policies and adopting new standards on aircraft noise and aircraft engine emissions. The United States is an active member in the CAEP activities, with at least one U.S. representative participating on each of the five working groups of CAEP.

In 2010, the CAEP Working Group for Noise (WG1) was tasked to develop options to further reduce airplane noise levels. The WG1 met several times over two years to accomplish the task. Representatives of Working Group 2 for Airports and Operations, the Modeling and Databases Group, and the Forecast Economic Analysis Support Group participated in the WG1 meetings to acquaint themselves with noise stringency options and to help WG1 define noise data requirements.

The WG1 considered five more stringent noise certification options for analysis. The new stringency options for analysis were based on the “cumulative” concept of Chapter 4, rather than the “traditional” option with specified reductions at each noise certification measurement point (flyover, lateral, and approach) of Stage 2 and Stage 3. The five cumulative options analyzed were 3, 5, 7, 9 and 11 decibel reductions from the Chapter 4/Stage 4 levels respectively.

In reaching a recommendation for a new ICAO noise standard for subsonic jet and large transport airplanes, the CAEP considered estimates of comprehensive costs and benefits associated with the five options. The technical working groups charged by the



CAEP to conduct the costs and benefits analysis used several supporting studies conducted by other CAEP working groups.<sup>1</sup>

A CAEP Steering Group met in July 2012 to review the results of the analysis prepared by the CAEP working groups and to formulate specific recommendations on the new standard and on applicability options that were to be forwarded to the full CAEP.

In February of 2013, the comprehensive costs and benefits analyses of the five stringency options that were prepared by the working groups and the parallel analysis prepared by the United States were presented at the ninth meeting of CAEP (CAEP9) in February 2013. After lengthy discussions, the CAEP9 agreed to approve an amendment to Annex 16, Volume I that included an increase in stringency of 7 EPNdB (cumulative) relative to the current Chapter 4 levels. In addition, the CAEP9 approved the WG1 recommendation to increase the stringency for takeoff weights less than 19,000 pounds (8618Kg).

At the 201st Session of the ICAO Council on March 3, 2014, the new Chapter 14 noise standard in Annex 16 was adopted. The new noise standard, which became effective July 14, 2014, applies to any application for new type designs submitted on or after December 31, 2017 for aircraft weighing 55,000Kg or more; for aircraft weighing less than 55,000Kg at takeoff, the applicability date is December 31, 2020.

### **III. Discussion of the Proposal**

The FAA is proposing to establish a new Stage 5 noise standard in part 36 for subsonic jet airplanes and subsonic transport category large airplanes. This new noise

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<sup>1</sup> The U.S. also conducted a cost/benefit analysis to assess the interdependencies associated with the noise stringency options under consideration by CAEP. The analysis took into consideration the environmental impacts of the stringency options (including assessing the health and welfare impacts) and, quantified interdependencies in terms of physical and monetary impacts for aircraft-related noise, fuel burn and emissions.

standard would ensure that the noise from new airplane designs continues to decline, and anticipates the incorporation of the latest available noise reduction technology. The proposed Stage 5 noise standard mirrors the ICAO Annex 16, Chapter 14 noise standard. The following is a discussion of the specific proposed changes to the certification standards in part 36 and its appendices and the operating rules of part 91 that are necessary to establish the proposed Stage 5 noise standard.

A. Definitions (§ 36.1 and § 91.851)

The FAA is proposing to add the following three terms to both § 36.1(f) and § 91.851: “Stage 5 noise level”, “Stage 5 airplane” and “Chapter 14 noise level.” In § 36.1(f), these terms would be designated as paragraphs (f)(12), (f)(13), and (f)(14) respectively. In § 91.851, the defined terms are listed alphabetically and these three new terms would be inserted accordingly.

The first term, Stage 5 Noise Level, is the designation for maximum permitted noise levels for the proposed standard. The second term, Stage 5 airplane, is the designation given to an airplane that complies with the proposed standard. The third term, “Chapter 14 noise level”, is the ICAO Annex 16, Volume 1 designation that corresponds to the Stage 5 noise level.

B. Incorporation by reference (§ 36.6)

The FAA is proposing to add a new paragraph (c)(4) to § 36.6 to incorporate by reference ICAO Annex 16, Volume 1, Aircraft Noise, Seventh Edition, July 2014, Amendment 11-B. This change allows full reference to the 2014 version of the ICAO document that includes the Chapter 14 requirements for noise measurement and evaluation and the maximum acceptable noise levels. Amendment 11-B introduced the more stringent

standard designated Chapter 14 (proposed here as Stage 5 in the United States) and includes a new Chapter 13 for tiltrotor aircraft noise standards. The Annex 16 documents are available for purchase by any interested person from ICAO.

C. Acoustical Changes (§ 36.7)

The FAA is proposing to amend § 36.7 to include the Stage 5 designation. The regulation prohibits certificated airplanes from adopting a design change that increases noise to the point that a lower noise stage designation is needed.

Accordingly, a new paragraph (e)(5) is proposed to specify that a Stage 3 airplane that becomes a Stage 5 airplane would have to remain a Stage 5 airplane. Paragraph (f) would be redesignated (f)(1), and a new paragraph (f)(2) would be added to specify that a Stage 4 airplane that becomes a Stage 5 airplane would have to remain a Stage 5 airplane. A new paragraph (g) would be added to specify that a Stage 5 airplane that underwent a change in type design would have to remain a Stage 5 airplane. Each of these sections apply when an applicant proposes a change to a type design that would increase noise levels under the acoustical change process described in 14 CFR § 21.93(b).

D. Date new noise limits apply (§ 36.103)

The date the proposed Stage 5 noise limits would apply differs depending on the maximum certificated take-off weight of airplane for which type certification is sought:

- For airplanes with a maximum certificated takeoff weight of 121,254 pounds (55,000 kg) or more, the new noise limits would apply to applications made on and after December 31, 2017;

- For airplanes with a maximum certificated takeoff weight less than 121,254 pounds (55,000 kg), the new noise limits would apply to applications made on and after December 31, 2020.

As the dates for the new Stage 5 standard approaches, an applicant may find that its airplane meets the Stage 5 noise limits before they are required. Once the Stage 5 standard is effective, the applicant may choose to have the airplane certificated to Stage 5 earlier than required. The FAA is proposing to amend § 36.103(c) to indicate that Stage 4 certification will end on the dates specified for Stage 5. We are also proposing two new paragraphs, § 36.103(d) and (e), stating the dates on which Stage 5 noise limits are applicable, depending on the weight of the airplane for which certification is sought.

E. Equivalency statement in flight manual (§ 36.106)

The FAA is proposing to add new § 36.106 entitled “Flight Manual statement of Chapter 14 noise level equivalency”. The need for a noise level equivalency statement evolved from problems experienced by U.S. operators when they were operating outside the United States. Because the FAA does not issue noise certificates, some foreign entities were confused as to the noise status of U.S. aircraft, and questioned whether Stage 3 references in the flight manual were sufficient to meet Chapter 3 requirements (especially since the two standards were not identical). When the FAA adopted Stage 4 in 2005, we included in § 36.105 a requirement to include a statement in the manual that the noise levels represent compliance with Stage 4. It then states that the FAA considered Stage 4 noise levels to be equivalent to the Chapter 4 noise levels required by ICAO countries. It is an important distinction that the FAA was not making a finding of compliance with

Chapter 4, as we have no authority to do so. The statement acknowledges that the noise levels are considered by the FAA to be the same for the two certification bases.

Accordingly, we are proposing a similar statement for Chapter 5 noise levels being the equivalent to the noise levels of Chapter 14. Users of the information are encouraged to provide feedback on how often this statement has been referenced, and whether any other information that might be useful could be included, as a comment to this action.

F. Alternative Measurement Procedures (Appendix A to Part 36)

Appendix A to part 36 prescribes the conditions under which airplane noise certification tests must be conducted and describes the measurement procedures that must be used in the measurement of airplane noise during certification testing. The most recent published ICAO measurement procedures that correspond to part 36, Appendix A are in Appendix 2 to ICAO Annex 16, Environmental Protection, Volume I, Aircraft Noise, Third Edition, July 2014, Amendment 11-B, that became applicable January 1, 2015. Before this version was adopted by ICAO earlier this year, there had been no substantive changes to the measurement procedures in either document since their harmonization in 2002.

To account for the changes to Annex 16, the FAA is proposing to add a new paragraph to Appendix A, A36.1.5, that would specify Appendix 2 to ICAO Annex 16, Environmental Protection, Volume I, Aircraft Noise, Third Edition, July 2014, Amendment 11-B, effective July 14, 2014, as an acceptable alternative for noise measurement and evaluation for Stage 5 airplanes. Specifying this acceptable alternative will harmonize the noise certification measurement procedures of part 36 with Annex 16, Volume 1 for Stage 5 airplanes. Since 2002, the FAA has allowed the Annex 16 noise measurement and evaluation procedures as an alternative to those in part 36 for subsonic jet airplanes and

subsonic transport category large airplanes in part 36. This use creates a nearly uniform noise certification standard for airplanes certified both in the United States and in the countries that recognize the Annex as their national standard.

G. Stage 5 Maximum Noise Levels (Appendix B to Part 36)

Appendix B to Part 36 contains the maximum noise levels for transport category and jet airplanes, and the noise certification test reference procedures and conditions. To comply with Appendix B, an applicant must show that noise levels were measured and evaluated using the procedures of Appendix A of this part, or an approved equivalent procedure.

In 2005 when the Stage 4 requirements were adopted, section B36.1 was amended to include the ICAO Annex 16 requirements for noise measurement and evaluation as an alternative. We are now proposing to amend section B36.1 to include an acceptable alternative for Stage 5 noise measurement and evaluation. The proposed alternative is Appendix 2 to ICAO Annex 16, Environmental Protection, Volume I, Aircraft Noise, Third Edition, July 2014, Amendment 11-B, applicable January 1, 2015.

The maximum noise levels for each stage airplane are specified in Section B36.5. The FAA is proposing to add the maximum noise levels for Stage 5 airplanes as paragraph B36.5(e).

H. Operational Restrictions (Part 91 Subpart I)

The Airport Noise and Capacity Act of 1990 prohibited the operation of civil subsonic jet airplanes over 75,000 pounds in the contiguous United States after December 31, 1999, unless they complied with Stage 3 noise levels. This restriction was codified in the operating rules in § 91.853. That section was amended in 2005 to include the operation

of Stage 4 airplanes when that standard was adopted. The FAA is proposing to add the phrase “or Stage 5” to include airplanes certificated to the new standard.

Similarly, in 2012, Congress prohibited the operation of civil subsonic jet airplanes weighing less than 75,000 pounds from operating in the contiguous United States after December 31, 2015, unless they comply with Stage 3 noise levels. That restriction was codified in § 91.881, to which the FAA now proposes to add the phrase “Stage 4 or Stage 5 noise levels” to include airplanes certificated to the quieter standards.

Similar changes to account for newer certifications are proposed for §§ 91.855, 91.858, 91.859, 91.881, and 91.883.

This proposed rule would add a definition to §91.851 for “Chapter 14 noise levels” to incorporate by reference the definition found in ICAO Annex 16, (details) That document is described in section III B, above. A change to the format of §91.851 is being made to account for the addition of a second incorporation by reference within the definitions. The section will now include the definitions themselves in paragraph (a) and the references for the incorporated documents in paragraph (b).

#### I. Chapter 14 Stringencies

The noise limits adopted by ICAO for Chapter 4 were 10dB lower at every weight than the then-existing Chapter 3. However, Chapter 14 imposes the stringency requirements at different times for different aircraft weights it identifies. In addition, for aircraft less than 8618kgs, the stringencies adopted are not parallel to the Stage 4 standards.

The FAA understands the Chapter 14 requirements, proposed here as Stage 5, as follows:

a. An airplane's maximum flyover, lateral and approach noise levels are each subtracted from the maximum permitted noise levels for Chapter 3 airplanes defined in Annex 16. The differences obtained are the noise limit margins which must be 17 EPNdB or greater when added together; and

b. An airplane's maximum noise levels (flyover, lateral, and approach) have to be at least 1 EPNdB less than the maximum permitted noise levels for Chapter 3 airplanes.

The new standard would apply to new airplane types submitted for certification after December 31, 2017 (or December 31, 2020, for airplanes weighing less than 55,000 kilograms). In addition, the new standard includes another condition to the cumulative stringency requirement, to require a margin of not less than 1.0 dB below Chapter 3 limits at each certification point. Chapter 14 includes a change in the noise limits applicable to subsonic jet airplanes with takeoff masses less than 8,618kg, and added a second "knee point" at 8,618kg, to use the same gradient of the limit line at lower masses as the higher masses and the constant limit line for airplanes with masses less than 2,000kg.

Annex 16 includes a second applicability date of December 31, 2020, for airplanes with a takeoff weight less than 55,000kg. The later compliance date was adopted to accommodate regional jet and propeller driven aircraft manufacturer's request for time to improve their products to meet the new stringency. The manufacturers asserted to CAEP that the technologies available for larger aircraft were not available for their lighter products because of technical constraints or economical unfeasibility. The 2020 applicability date is intended to account for the delayed changes in technology for lighter airplanes.



#### **IV. Regulatory Notices and Analyses**

##### **A. Regulatory Evaluation**

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 and Executive Order 13563 direct that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 (Public Law 96-354) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (Public Law 96-39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, the Trade Act requires agencies to consider international standards and, where appropriate, that they be the basis of U.S. standards. Fourth, the Unfunded Mandates Reform Act of 1995 (Public Law 104-4) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of \$100 million or more annually (adjusted for inflation with the base year of 1995).

Department of Transportation Order DOT 2100.5 prescribes policies and procedures for simplification, analysis, and review of regulations. If the expected impact is so minimal that a proposed or final rule does not warrant a full evaluation, this order permits that a statement to that effect and the basis for it being included in the preamble if a full regulatory evaluation of the costs and benefits is not prepared. Such a

determination has been made for this proposed rule. The reasoning for that determination follows.

This proposed rule would establish a new Stage 5 noise standard for subsonic jet airplanes and subsonic transport category large airplanes. The proposed noise standard would apply to new type designs for which application is made on or after December 31, 2017, for airplanes with a maximum certificated takeoff weight of 121,254 pounds (55,000 kilograms) or more, and December 31, 2020, for airplanes with a maximum certificated takeoff weight of less than 121,254 pounds (55,000 kilograms).

The proposed noise standard would provide more stringent noise certification standards for Stage 5 airplanes certificated in the United States and would be consistent with those for airplanes certificated under the new International Civil Aviation Organization (ICAO) Annex 16 Chapter 14 noise standards.

The development of the new ICAO rule was summarized above. Additional documents describing the development of the new ICAO rule in more detail, including cost analyses used by ICAO, are available in the docket. These documents include:

1. Cost-benefit Analysis of CAEP9 Noise Stringency Options, presented by U.S. CAEP Member, COMMITTEE ON AVIATION ENVIRONMENTAL PROTECTION (CAEP), NINTH MEETING, Montreal, 4 to 15 February 2013.
2. Report of the Ninth Meeting, COMMITTEE ON AVIATION ENVIRONMENTAL PROTECTION (CAEP), NINTH MEETING, Montreal, 4 to 15 February 2013.

Several airplanes currently in production that have a maximum certificated takeoff weight of more than 121, 254 pounds already meet the proposed Stage 5 noise limits.

These airplanes include the Airbus A-380 and A-350, and the Boeing 747-8 and 787 models.

The applicability date of December 31, 2020, for airplanes with a maximum certificated takeoff weight of less than 121,254 pounds was adopted by the ICAO to accommodate the requests of the manufacturers of lighter jet and propeller-driven airplanes for more time to meet the new requirements. These manufacturers asserted that the technologies available for heavier airplanes were not available for their products because of technical restraints or economic unfeasibility.

Aerospace technology is continually evolving. As performance improvements are introduced in airplanes for competitive reasons, they often result in less noise. For many of the new airplane programs announced prior to CAEP9 (2013), analyses show that such airplanes will be able to meet the proposed Stage 5 standard without any additional cost.

Recently, there have been technological advances in the lower weight classes such as the geared turbofan engine and the development of quieter control surfaces. Given these recent technological advances in lighter airplanes, the FAA expects all manufacturers to be able meet the new standards by the December 31, 2020, date. As this expectation is crucial to the minimal cost determination, the FAA requests comments regarding whether the existing and expected technological advancements will be sufficient to allow the manufacturers to achieve compliance with the provisions of the proposed rule by 2020.

In 2017 and 2020, when the proposed rule would become effective, all new type design subsonic transport category large airplanes, followed by smaller airplanes, will be able to meet the Stage 5 noise limits by using then-current available noise reduction technologies. Therefore, the proposed rule would have minimal, if any, cost.

B. Initial Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (Public Law 96-354) (RFA) establishes "as a principle of regulatory issuance that agencies shall endeavor, consistent with the objective of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the business, organizations, and governmental jurisdictions subject to regulation." To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration. The RFA covers a wide range of small entities, including small businesses, not-for-profit organizations and small governmental jurisdictions.

Agencies must perform a review to determine whether a rule will have a significant economic impact on a substantial number of small entities. If the agency determines that it will, the agency must prepare a regulatory flexibility analysis as described in the RFA.

However, if an agency determines that a rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the RFA provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

In 2017 and 2020, when the proposed rule would become effective, all new type design subsonic transport category large airplanes, followed by smaller airplanes, will be able to meet the Stage 5 noise limits by using then-current available noise reduction technologies. Therefore, the proposed rule would have minimal, if any, cost.

If an agency determines that a rulemaking will not result in a significant economic impact on a substantial number of small entities, the head of the agency may so certify under section 605(b) of the RFA. Therefore, as provided in section 605 (b), the head of the FAA certifies that this rulemaking would not result in a significant economic impact on a substantial number of small entities.

The FAA invites industry comments on this determination and requests that all comments be accompanied with clear and detailed supporting data.

C. International Trade Impact Assessment

The Trade Agreement Act of 1979 (Public Law 96-39), as amended by the Uruguay Round Agreements Act (Public Law 103-465), prohibits Federal agencies from establishing standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Pursuant to these Acts, the establishment of standards is not considered an unnecessary obstacle to the foreign commerce of the United States, so long as the standard has a legitimate domestic objective, such as the protection of safety, and does not operate in a manner that excludes imports that meet this objective. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards.

The FAA has assessed the potential effect of this proposed rule and determined that it would reduce impediments to international traded by aligning United States standards with ICAO standards.

D. Unfunded Mandates Assessment

Title II of the Unfunded Mandates Reform Act of 1995 (Public Law 104-4) requires each Federal agency to prepare a written statement assessing the effects of any

Federal mandate in a proposed or final agency rule that may result in an expenditure of \$100 million or more (in 1995 dollars) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a "significant regulatory action." The FAA currently uses an inflation-adjusted value of \$155 million in lieu of \$100 million.

For the reasons stated above regarding the expected minimal cost of this proposed standard, this proposed rule does not contain such a mandate. Therefore, the requirements of Title II of the Act do not apply.

E. Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) requires that the FAA consider the impact of paperwork and other information collection burdens imposed on the Public. The noise stringency requirement proposed here would not require any new collection of information and none is associated with this proposed rule. The FAA has determined that there would be no new requirement for information collection associated with this proposed rule.

F. International Compatibility and Cooperation

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to conform to International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has reviewed the corresponding ICAO Standards and Recommended Practices and has identified no differences with these proposed regulations.

Executive Order (EO) 13609, Promoting International Regulatory Cooperation, (77 FR 26413, May 4, 2012) promotes international regulatory cooperation to meet shared

challenges involving health, safety, labor, security, environmental, and other issues and reduce, eliminate, or prevent unnecessary differences in regulatory requirements. The FAA has analyzed this action under the policy and agency responsibilities of Executive Order 13609, Promoting International Regulatory Cooperation. The agency has determined that this action would adopt the same regulatory standards as ICAO has adopted for Stage 5 (ICAO Chapter 14) noise certification, preventing any unnecessary difference in requirements between the United States and countries that use ICAO standards as their regulatory requirements.

G. Environmental Analysis

FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. The FAA has determined this rulemaking action qualifies for the categorical exclusion identified in paragraph 312d of the Order and involves no extraordinary circumstances.

H. Regulations Affecting Intrastate Aviation in Alaska

Section 1205 of the FAA Reauthorization Act of 1996 (110 Stat. 3213) requires the Administrator, when modifying 14 CFR regulations in a manner affecting intrastate aviation in Alaska, to consider the extent to which Alaska is not served by transportation modes other than aviation, and to establish appropriate regulatory distinctions. Because this proposed rule would apply to all newly certificated airplanes after the dates specified, it could, if adopted, affect intrastate aviation in Alaska. The FAA, therefore, specifically requests comments on whether there is justification for applying the proposed rule differently in intrastate operations in Alaska.

## **V. Executive Order Determinations**

### **A. Executive Order 13132, Federalism**

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order 13132, Federalism. The agency has determined that this action would not have a substantial direct effect on the States, or the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government, and, therefore, would not have Federalism implications.

### **B. Executive Order 13211, Regulations that Significantly Affect Energy Supply, Distribution, or Use**

The FAA analyzed this proposed rule under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). The agency has determined that it would not be a “significant energy action” under the executive order and would not be likely to have a significant adverse effect on the supply, distribution, or use of energy.

## **VI. Additional Information**

### **A. Comments Invited**

The FAA invites interested persons to participate in this rulemaking by submitting written comments, data, or views. The agency also invites comments relating to the economic, environmental, energy, or federalism impacts that might result from adopting the proposals in this document. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. To ensure the docket does not contain duplicate comments, commenters should send only



one copy of written comments, or if comments are filed electronically, commenters should submit only one time.

The FAA will file in the docket all comments it receives, as well as a report summarizing each substantive public contact with FAA personnel concerning this proposed rulemaking. Before acting on this proposal, the FAA will consider all comments it receives on or before the closing date for comments. The FAA will consider comments filed after the comment period has closed if it is possible to do so without incurring expense or delay. The agency may change this proposal in light of the comments it receives.

B. Proprietary or Confidential Business Information

Commenters should not file proprietary or confidential business information in the docket. Such information must be sent or delivered directly to the person identified in the FOR FURTHER INFORMATION CONTACT section of this document, and marked as proprietary or confidential. If submitting information on a disk or CD ROM, mark the outside of the disk or CD ROM, and identify electronically within the disk or CD ROM the specific information that is proprietary or confidential.

Under 14 CFR 11.35(b), if the FAA is aware of proprietary information filed with a comment, the agency does not place it in the docket. It is held in a separate file to which the public does not have access, and the FAA places a note in the docket that it has received it. If the FAA receives a request to examine or copy this information, it treats it as any other request under the Freedom of Information Act (5 U.S.C. 552). The FAA processes such a request under Department of Transportation procedures found in 49 CFR part 7.

C. Availability of Rulemaking Documents

An electronic copy of rulemaking documents may be obtained from the Internet by—

1. Searching the Federal eRulemaking Portal (<http://www.regulations.gov>);
2. Visiting the FAA's Regulations and Policies web page at [http://www.faa.gov/regulations\\_policies](http://www.faa.gov/regulations_policies) or
3. Accessing the Government Printing Office's web page at <http://www.gpo.gov/fdsys/>.

Copies may also be obtained by sending a request to the Federal Aviation Administration, Office of Rulemaking, ARM-1, 800 Independence Avenue SW., Washington, DC 20591, or by calling (202) 267-9680. Commenters must identify the docket or notice number of this rulemaking.

All documents the FAA considered in developing this proposed rule, including economic analyses and technical reports, may be accessed from the Internet through the Federal eRulemaking Portal referenced in item (1) above.

### **List of Subjects**

#### **14 CFR Part 36**

Aircraft, Aviation safety, Life-limited parts, Incorporation by reference, Reporting and recordkeeping requirements.

#### **14 CFR Part 91**

Aircraft, Aviation safety, Life-limited parts, Incorporation by reference, Reporting and recordkeeping requirements.

In consideration of the foregoing, the Federal Aviation Administration proposes to amend chapter I of title 14, Code of Federal Regulations as follows:

**PART 36—NOISE STANDARDS: AIRCRAFT TYPE AND AIRWORTHINESS**  
**CERTIFICATION**

1. The authority citation for part 36 continues to read as follows:

Authority: 42 U.S.C. 4321 *et seq.*; 49 U.S.C. 106(g), 40113, 44701-44702, 44704, 44715; sec. 305, Pub. L. 96-193, 94 Stat. 50, 57; E.O. 11514, 35 FR 4247, 3 CFR, 1966-1970 Comp., p. 902.

2. Amend § 36.1 by adding paragraphs (f)(12) through (14) to read as follows:

**§ 36.1 Applicability and definitions**

\* \* \* \* \*

(f) \* \* \*

(12) A “Stage 5 noise level” means a noise level at or below the Stage 5 noise limit prescribed in section B36.5(e) of Appendix B of this part.

(13) A “Stage 5 airplane” means an airplane that has been shown under this part not to exceed the Stage 5 noise limit prescribed in section B36.5(e) of Appendix B of this part.

(14) A “Chapter 14 noise level” means a noise level at or below the Chapter 14 maximum noise level prescribed in Chapter 14 of the International Civil Aviation Organization (ICAO) Annex 16, Volume I, Amendment 11-B, applicable January 1, 2015. (Incorporated by reference, see §36.6).

\* \* \* \* \*

3. Amend § 36.6 by adding paragraph (c)(4) to read as follows:

**§ 36.6 Incorporation by reference.**

\* \* \* \*

(c) \* \*

(4) International Standards and Recommended Practices entitled “Environmental Protection, Annex 16 to the Convention on International Civil Aviation, Volume I, Aircraft Noise”, Seventh Edition, July 2014, amendment 11-B, effective July 14, 2014.

\* \* \* \*

4. Amend § 36.7 by adding paragraph (e)(5), redesignating paragraph (f) as (f)(1) and adding paragraphs (f)(2) and (g) to read as follows:

**§ 36.7 Acoustical change: Transport category large airplanes and jet airplanes.**

\* \* \* \*

(e) \* \*

(5) If an airplane is a Stage 3 airplane prior to a change in type design, and becomes a Stage 5 airplane after the change in type design, the airplane must remain a Stage 5 airplane.

(f)(1) \* \*

(2) If an airplane is a Stage 4 airplane prior to a change in type design, and becomes a Stage 5 airplane after the change in type design, the airplane must remain a Stage 5 airplane.

(g) Stage 5 airplanes: If an airplane is a Stage 5 airplane prior to a change in type design, the airplane must remain a Stage 5 airplane after the change in type design.

5. Amend § 36.103 by revising paragraph (c) and adding paragraphs (d) and (e) to read as follows:

**§ 36.103 Noise limits.**

\* \* \* \* \*

(c) Type certification applications between January 1, 2006, and the date specified in paragraph (d) or (e) of this section, as applicable for airplane weight. If application is made on or after January 1, 2006, and before the date specified in paragraph (d) or (e) of this section (as applicable for airplane weight), it must be shown that the noise levels of the airplane are no greater than the Stage 4 noise limit prescribed in section B36.5(d) of appendix B of this part. If an applicant chose to voluntarily certificate an airplane to Stage 4 prior to January 2006, then the requirements of §36.7(f) of this part apply to that airplane.

(d) For airplanes with a maximum certificated takeoff weight of 121,254 pounds (55,000 kg) or more, type certification applications on or after December 31, 2017. If application is made on or after December 31, 2017, it must be shown that the noise levels of the airplane are no greater than the Stage 5 noise limit prescribed in section B36.5(e) of Appendix B of this part. Prior to December 31, 2017, an applicant may seek voluntary certification to Stage 5. If Stage 5 certification is chosen, the requirements of § 36.7(g) of this part will apply.

(e) For airplanes with a maximum certificated take-off weight of less than 121,254 pounds (55,000 kg), type certification applications on or after December 31, 2020. If application is made on or after December 31, 2020, it must be shown that the noise levels of the airplane are no greater than the Stage 5 noise limit prescribed in section B36.5(e) of Appendix B of this part. Prior to December 31, 2020, an applicant may seek voluntary certification to Stage 5. If Stage 5 certification is chosen, the requirements of §36.7(g) of this part will apply.

6. Add § 36.106 to read as follows:

**§ 36.106 Flight Manual statement of Chapter 14 noise level equivalency.**

For each airplane that meets the requirements for Stage 5 certification, the Airplane Flight Manual or operations manual must include the following statement: “The following noise levels comply with part 36, Appendix B, Stage 5 maximum noise level requirements and were obtained by analysis of approved data from noise tests conducted under the provisions of part 36, Amendment [insert part 36 amendment number to which the airplane was certificated]. The noise measurement and evaluation procedures used to obtain these noise levels are considered by the FAA to be equivalent to the Chapter 14 noise levels required by the International Civil Aviation Organization (ICAO) in Annex 16, Volume 1, Appendix 2, Amendment 11-B, applicable January 1, 2015.” (Incorporated by reference, see § 36.6).

7. Amend section A36.1 of Appendix A by adding paragraph A36.1.5 to read as follows:

**Appendix A to Part 36—Aircraft Noise Measurement and Evaluation Under § 36.101**

\* \* \* \* \*

A36.1.5 For Stage 5 airplanes, an acceptable alternative for noise measurement and evaluation is Appendix 2 to the International Civil Aviation Organization (ICAO) Annex 16, Environmental Protection, Volume I, Aircraft Noise, Seventh Edition, July 2014, Amendment 11-B, effective July 14, 2014. (Incorporated by reference, see § 36.6).

8. In appendix B, in section B36.1, revise paragraph (b) and add paragraph (c), and in section B36.5, add paragraph (e) to read as follows:

## **Appendix B to Part 36—Noise Levels for Transport Category and Jet Airplanes**

### **Under § 36.103**

\* \* \* \* \*

(b) For Stage 4 airplanes, an acceptable alternative to paragraph (a) of this section for noise measurement and evaluation is Appendix 2 to the International Civil Aviation Organization (ICAO) Annex 16, Environmental Protection, Volume I, Aircraft Noise, Third Edition, July 1993, Amendment 7, effective March 21, 2002. (Incorporated by reference, see § 36.6).

(c) For Stage 5 airplanes, an acceptable alternative to paragraph (a) of this section for noise measurement and evaluation is Appendix 2 to the International Civil Aviation Organization (ICAO) Annex 16, Environmental Protection, Volume I, Aircraft Noise, Seventh Edition, July 2014, Amendment 11-B, , effective July 14, 2014. (Incorporated by reference, see § 36.6).

\* \* \* \* \*

(e) For any Stage 5 airplane, the flyover, lateral, and approach maximum noise levels are prescribed in Chapter 14, Paragraph 14.4, Maximum Noise Levels, of the International Civil Aviation Organization (ICAO) Annex 16, Environmental Protection, Volume I, Aircraft Noise, Seventh Edition, July 2014, Amendment 11-B, effective July 14, 2014. (Incorporated by reference, see § 36.6).

## **PART 91—GENERAL OPERATING AND FLIGHT RULES**

9. The authority citation for part 91 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 1155, 40103, 40113, 40120, 44101, 44111, 44701, 44704, 44709, 44711, 44712, 44715, 44716, 44717, 44722, 46306, 46315, 46316,

46504, 46506-46507, 47122, 47508, 47528-47531, 47534, articles 12 and 29 of the Convention on International Civil Aviation (61 Stat. 1180), (126 Stat. 11).

10. Amend § 91.851 by:

- a. Designating the introductory text as paragraph (a);
- b. Revising the definition for the term “Chapter 4 noise level” and adding, in alphabetical order, definitions for the terms “Chapter 14 noise level”, “Stage 5 airplane” and “Stage 5 noise level”; and
- c. Adding paragraph (b).

The revisions and additions read as follows:

**§91.851 Definitions.**

(a) \* \* \*

*Chapter 4 noise level* means a noise level at or below the maximum noise level prescribed in Chapter 4, Paragraph 4.4, Maximum Noise Levels, of the ICAO Annex 16, Volume I, Amendment 7.

*Chapter 14 noise level* means a noise level at or below the Chapter 14 maximum noise level prescribed in Chapter 14 of the ICAO Annex 16, Volume I, Amendment 11-B. Airplanes certificated to Chapter 14 are considered equivalent to Stage 5, and comply with all of the applicable noise operating rules of this part.

\* \* \* \* \*

*Stage 5 airplane* means an airplane that has been shown not to exceed the Stage 5 noise limit prescribed in part 36 of this chapter. A Stage 5 airplane complies with all of the applicable noise operating rules of this part.



*Stage 5 noise level* means a noise level at or below the Stage 5 noise limit prescribed in part 36 of this chapter.

(b) The Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51 approved the incorporation by reference of these documents. Copies may be reviewed at the U.S. Department of Transportation, Docket Operations, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:

[http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

(1) International Civil Aviation Organization (ICAO), Document Sales Unit, 999 University Street, Montreal, Quebec H3C 5H7, Canada,

<http://www.ICAO.int/eshop/index.cfm>:

(i) ICAO Annex 16, Volume I, Amendment 7, effective March 21, 2002.

(ii) ICAO Annex 16, Volume I, Seventh Edition, July 2014, Amendment 11-B, effective July 14, 2014.

(2) [Reserved]

11. Revise § 91.853 to read as follows:

**§91.853 Final compliance: Civil subsonic airplanes.**

Except as provided in § 91.873, after December 31, 1999, no person shall operate to or from any airport in the contiguous United States any airplane subject to § 91.801(c) of this subpart, unless that airplane has been shown to comply with Stage 3, Stage 4, or Stage 5 noise levels.

12. Amend § 91.855 by revising paragraph (a) to read as follows:

**§91.855 Entry and nonaddition rule.**

\* \* \* \*

(a) The airplane complies with Stage 3, Stage 4, or Stage 5 noise levels.

\* \* \* \*

13. Amend § 91.858 by revising paragraph (a)(2) to read as follows:

**§91.858 Special flight authorizations for non-revenue Stage 2 operations.**

(a) \* \* \*

(2) Obtain modifications to meet Stage 3, Stage 4, or Stage 5 noise levels.

\* \* \* \*

14. Revise § 91.859 to read as follows:

**§91.859 Modification to meet Stage 3 or Stage 4 noise levels.**

For an airplane subject to § 91.801(c) of this subpart and otherwise prohibited from operation to or from an airport in the contiguous United States by § 91.855, any person may apply for a special flight authorization for that airplane to operate in the contiguous United States for the purpose of obtaining modifications to meet Stage 3, Stage 4, or Stage 5 noise levels.

15. Revise § 91.881 to read as follows:

**§91.881 Final compliance: Civil subsonic jet airplanes weighing 75,000 pounds or less.**

Except as provided in § 91.883, after December 31, 2015, a person may not operate to or from an airport in the contiguous United States a civil subsonic jet airplane subject to § 91.801(e) of this subpart that weighs less than 75,000 pounds unless that airplane has been shown to comply with Stage 3, Stage 4, or Stage 5 noise levels.

16. Amend § 91.883 by revising paragraph (a)(3) to read as follows:

**§91.883 Special flight authorizations for jet airplanes weighing 75,000 pounds or less.**

(a) \* \* \*

(3) To obtain modifications to the airplane to meet Stage 3, Stage 4, or Stage 5 noise levels.

\* \* \* \* \*

Issued under authority provided by 49 U.S.C. 44715 in Washington, DC, on December 21, 2015.

Curtis Holsclaw

Acting Executive Director, Office of Environment and Energy

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